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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/542,654	05/05/2006	Bernadette Craster	57.0513 US PCT	8888

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SCHLUMBERGER-DOLL RESEARCH  
ATTN: INTELLECTUAL PROPERTY LAW DEPARTMENT  
P.O. BOX 425045  
CAMBRIDGE, MA 02142

EXAMINER
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HARCOURT, BRAD

ART UNIT	PAPER NUMBER
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3676

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12/26/2007

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	Application No. 10/542,654	Applicant(s) CRASTER ET AL.	
	Examiner Brad Harcourt	Art Unit 3676	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-60 is/are pending in the application.  
4a) Of the above claim(s) 55 and 56 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-54 and 57-60 is/are rejected.
- 7) ☒ Claim(s) 37 and 40 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☒ All    b) ☐ Some \*    c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  - ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |  |
|--|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. ____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date <u>5/15/2006</u> . | 6) <input type="checkbox"/> Other: ____  |

**DETAILED ACTION**

***Election/Restrictions***

Restriction to one of the following inventions is required under 35 U.S.C. 121:

- I. Claims 1-54, drawn to a System for Zonal Isolation, classified in class 166, subclass 387.
- II. Claims 55 and 56, drawn to a Wellbore Fluid for Zonal Isolation, classified in class 166, subclass 285.

The inventions are distinct, each from the other because of the following reasons:

Inventions I and II are related as subcombinations disclosed as usable together in a single combination. The subcombinations are distinct if they do not overlap in scope and are not obvious variants, and if it is shown that at least one subcombination is separately usable. In the instant case, subcombination I has separate utility such as a zonal isolation system without the use of a polypropylene sealing fluid and subcombination II can be used independently from subcombination I as a sealing fluid. See MPEP § 806.05(d).

The examiner has required restriction between subcombinations usable together. Where applicant elects a subcombination and claims thereto are subsequently found allowable, any claim(s) depending from or otherwise requiring all the limitations of the allowable subcombination will be examined for patentability in accordance with 37 CFR 1.104. See MPEP § 821.04(a). Applicant is advised that if any claim presented in a continuation or divisional application is anticipated by, or includes all the limitations of, a claim that is allowable in the present application, such claim may be subject to

provisional statutory and/or nonstatutory double patenting rejections over the claims of the instant application.

During a telephone conversation with Jody Destefanis on 12/19/2007 a provisional election was made with traverse to prosecute the invention of System for Zonal Isolation, claims 1-54. Affirmation of this election must be made by applicant in replying to this Office action. Claims 55 and 56 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

### ***Claim Objections***

Claim 5 is objected to because of the following informalities: The limitation "the sealing material" lacks antecedent basis in the claims. Claims 21 and 30 are objected to as the limitation "the cement sheath" lacks antecedent basis. Claim 50 is objected to as the limitation "the well tube" lacks antecedent basis. Appropriate correction is required.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-8, 11-20, 27, 28, 30, 32-36, 38, 39, 41-51, 53, are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Cheymol et al. (US Patent No. 4,913,232).

Cheymol discloses a system for maintaining zonal isolation in a wellbore, characterized in that said system comprises, at specific locations Z1 and Z2 along said wellbore, sealing elements (rings) 2, said sealing element being able to deform both during and after placement and wherein the sealing element is maintained under compression after completion of the placement; sealing elements 2 are connected to a fluid communication element T designed to pressurize at least part 6, 18 of the sealing element 2; sealing elements 2 are confined in a volume surrounded by materials (formation P) of high Young's modulus (solid rock); sealing elements 2 comprise an elastomer sealing material that is an elastic solid; sealing elements 2 comprise a sealing material that is a settable liquid filler 11 pumped through tubing T; liquid filler 11 is "constituted by liquid elastomers such as fluorinated silicones, polysulfides, polythioethers and also epoxy" (col. 8, lines 22-24) that constitutes a yield stress fluid and withstand pressures "of several hundred bars" (col. 8, line 18).

Cheymol does not explicitly define the Young's modulus of the sealing element 2, but an elastomer material would have a Young's modulus between 100 to 1500 MPa. The system is designed for "separating at least two production zones in a well" (abstract) so necessarily seals 2 would be deformed and all sealing elements and materials would be in place for the lifetime of the well. The formations around the wellbore comprise permeable sections Z1 and Z2, and impermeable sections surrounding it (Fig. 6). Seal ring 2 is placed in a volume defined by casing P, tubing T and cement C. Cement C maintains upper seal 2 in compression.

Communication to the seals 2 can be "normally closed by a valve which responds to a certain pressure threshold" (col. 7, lines 6-8). Additionally, fluid communication can be "with an injector device being lowered inside the casing, other systems may also be used for the same purpose" (col. 7, lines 8-9) that constitutes a control line tube or a delivery line tube between the surface and sealing element.

In reference to claim 50, the limitation "well tube" is interpreted to mean a well tubing string independent of casing T.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over Cheymol et al. (US Patent No. 4,913,232).

Cheymol, as described above, discloses all of the limitations of the above claim with the exception of having a cement sheath around seal members. Cheymol discloses cement C above a seal member, and discloses that prior art discloses that "gap H extending axially between two zones was filled with cement in the annular space 5 between the rock wall of the well P and its casing T" (col. 4, lines 36-39). It would have been obvious to a person having ordinary skill in the art at the time of the invention

to sheath a seal element with cement on both sides on the zonal isolation of Cheymol to provide a cheap permanent reinforcing seal.

Claims 9 and 60 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cheymol et al. (US Patent No. 4,913,232) in view of Eoff et al. (US Patent No. 6,187,839).

Cheymol discloses all of the limitations of the above claims with the exception of using a visco-plastic sealing material or a gelled sealing material. Eoff discloses "methods of sealing subterranean zones" (col. 2, lines 24-25) that includes "polypropylene glycol" (col. 3, line 65), which is a visco-plastic material, that polymerizes "thereby forming a sealing and plugging gel in the zone" (col. 6, lines 9-10). It would have been obvious to a person having ordinary skill in the art at the time of the invention to include a visco-plastic gel seal on the zonal isolation system of Cheymol in view of Eoff to create a high strength sealing body that can be pumped into an inflatable packer.

Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Cheymol et al. (US Patent No. 4,913,232) Willauer et al. (US Patent No 6,050,336).

Cheymol discloses all of the limitations of the above claim with the exception of including a visco-elastic seal member. Willauer discloses a plug using a visco-elastic material to seal off an area of a wellbore. It would have been obvious to a person having ordinary skill in the art at the time of the invention to use a visco-elastic plug on the zonal isolation apparatus of Cheymol in view of Willauer to provide a seal apparatus that changes shape when exposed to high pressure.

Claims 23 and 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cheymol et al. (US Patent No. 4,913,232) in view of Patel et al. (US Patent Application Publication No. 2005/0199401).

Cheymol discloses all of the limitations of the above claims with the exception of disposing a packer on an expandable tubing string. Patel discloses a system and method comprising a packer 12 and "conveyance device 14 [that] may comprise a solid expandable tubing" (par. 0081). It would have been obvious to a person having ordinary skill in the art at the time of the invention to include an expandable tubing that the packer is disposed on in the system of Miller or Coronado in view of Patel to provide a system that can be used with any sized borehole. In reference to claim 31, expanding the tubular element would necessarily press the packer against the wellbore wall.

Claims 22, 29 and 54 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cheymol et al. (US Patent No. 4,913,232) in view of Cronmiller (US Patent No. 4,339,000).

Cheymol discloses all of the limitations of the above claims with the exception of expanding cement and plugging a well for abandonment. Cronmiller discloses using a cement "capable of expanding during the curing thereof" (col. 5, lines 9-10) with a plug 16 intended to seal off an abandoned production zone (Fig. 3). It would have been obvious to a person having ordinary skill in the art at the time of the invention to use expanding cement to plug a well on the isolation system of Cheymol in view of Cronmiller to ensure a tighter seal on a production zone that was no longer profitable.



Claim 52 is rejected under 35 U.S.C. 103(a) as being unpatentable over Cheymol et al. (US Patent No. 4,913,232) in view of Duggan et al. (US Patent Application Publication No. 2006/0283607).

Cheymol discloses all of the limitations of the above claims with the exception of underreaming a section of the wellbore before placing a seal. Duggan discloses sealing element 16 that is used "drilling below an existing section of bore-lining tubing to a larger diameter than the inner diameter of the existing tubing... by means of an underreamer" (par. 0022). It would have been obvious to a person having ordinary skill in the art at the time of the invention to underream a section of the bore on the system of Cheymol in view of Duggan to expand a bore to any desired diameter.

#### ***Allowable Subject Matter***

Claims 37 and 40 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

#### ***Conclusion***


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Brad Harcourt whose telephone number is 571-272-7303. The examiner can normally be reached on Monday through Friday from 8:30 to 6.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jennifer Gay can be reached on 571-272-7029. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Application/Control Number:  
10/542,654  
Art Unit: 3676

Page 9

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Jennifer Gay  
Supervisory Patent Examiner  
Art Unit 3676

BH  
12/20/07